



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,157	03/13/2006	Gilad Almogy	6317P003	7462
57605 7590 01/05/2010 APPLIED MATERIALS, INC. C/O SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, WILLIS TOWER CHICAGO, IL 60606-1080				
EXAMINER SAKELARIS, SALLY A				
ART UNIT 1797		PAPER NUMBER		
MAIL DATE 01/05/2010		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/530,157

**Applicant(s)**

ALMOGY ET AL.

**Examiner**

Sally A. Sakelariss

**Art Unit**

1797

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 and 34-36 is/are pending in the application.
- 4a) Of the above claim(s) 1-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-31 and 34-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

The amendment filed 10/9/2009 has been received and considered for examination. Claims 32, 33, and 37-44 have been cancelled, claims 1-25 are withdrawn and claims 26-31 and 34-36 have been amended and remain pending.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 26-28, 30, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. (US 6271671) in view of Alumot et al. (US 5,699,447).

With regard to claims 26 and 28, in Figure 2 Charles disclose a system for defect localization, comprising: means for providing an electrical signal (40) to at least one conductor (Figure 3 (66)) of a test structure (30); wherein the test structure comprises at least the conductor and electro-optically active material (60, 64, 62) that is positioned such as to provide an indication about the electrical status of the at least one conductor (66); means for illuminating the electro-optically active material of the test structure (Fig. 2 (32)); at least one detector (46), capable of detecting light scattered or reflected from the electro-optically active material of the test structure; and a processor (lock in amplifier (48)) for processing detection signals from the detectors to locate a defect. (Col. 7 lines 31-41).

With regard to claim 27, Charles et al. teach the means for illuminating illuminates the test structure with polarized light via Figure 2's disclosure of a polarizer (34).

With regard to claim 30, Charles et al. teach that the electrical signal is 3 volts (i.e. about 5 volts) (Col. 6 line 29).

Applicant should note that regarding claims 34 and 36, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

With regard to claims 26, 34, and 36, Charles teaches that the processor (48) is adapted to process the location of the defect (Col. 7 lines 31-41).

Charles et al. does not teach the device with multiple phases or the device that is adapted to acquire images or process those images as recited in claims 26, 34 and 36.

Alumot et al. teach an apparatus for inspecting the surface of chips and wafers for defects including a first and second phase (i.e., multiple phases) of scanning the incident substrate with a laser (Abstract). The reference teaches camera (110), and multiple image processors (1<sup>st</sup> (7) and 2<sup>nd</sup> (11)) in Figure 1 for optically examining with a relatively high spatial resolution the suspected locations for the presence or absence of a defect therein. In light of the intended use recited in this claim, Alumot is therefore interpreted as teach a processor capable of generating images and processing images as is claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the device of Charles alongside the optical detection components of Alumot et al. as the Alumot system provides a method and components for inspecting semiconductor wafers at relatively high speeds and with a relatively low false alarm rate avoiding losses and production downtime and increasing overall yields (Col. 1 lines 38-50).

2. Claims 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. in view of Alumot et al. (US 5,699,447) and in further view of the product description of a lock in amplifier (Perkin Elmer Technical note, 2000).

With regard to claims 29 and 31, Charles et al. teaches the use of a "Lock in amplifier" (48) in their device wherein the electrical signal is either an AC or DC currents.

Charles et al. nor Alumot teach the exact specifications and capabilities of their lock-in amplifier (48) within the reference.

With regard to claims 29 and 31, the product manual entitled: "What is a Lock-in Amplifier" teaches that a lock-in amplifier, in common with most AC indicating instruments, provides a DC output proportional to the AC signal under investigation, thus disclosing an electrical signal that is both an AC and DC current (Pg.1 left hand side).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the device of Charles in view of Alumot with the lock-in amplifier of Perkin Elmer as the component's "inherent tracking ability allows extremely small bandwidths to be defined for the purpose of signal-to-noise ratio improvement since there is no frequency 'drift' as is the case with analog 'tuned filter/rectifier' systems." (Perkin Elmer, Pg.1 lower left side).

3. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Charles et al. in view of Alumot et al. and in further view of EG&G Princeton applied research product description ("Explore the Lock-in Amplifier, 1983).

The teachings of Charles in view of the Alumot et al. can be seen above.

The pair of references does not teach the particular technical specifications of their lock-in amplifier device that can operate with a frequency range of between 1-100 Hz.

The EG&G product description teaches that a lock-in amplifier has a frequency range limited to 0.1Hz to 200kHz, thus disclosing the 1-100Hz as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the device of Charles in view of Alumot et al. with the lock-in amplifier taught within the EG&G product manual since it has a low frequency range enabling a broader range of detection. Further the reference teaches that it can measure weak distortion components in the presence of obscuring background noise and directly measure the distortion of a linear system without concern for the spectral purity of the excitation sources which would greatly improve the quality and efficiency of the defect detecting device (EG&G Pg. 1 left side).

### ***Response to Arguments***

Applicant's arguments with respect to claims 26-31 and 34-36 have been considered but are moot in view of the new ground(s) of rejection.

The applicant's arguments and amendments that were made with respect to Charles et al. were convincing and necessitated the addition of the Alumot et al. reference to the new rejections applied above. No additional, substantive arguments were provided by the applicant to other references.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sally A. Sakelaris whose telephone number is 5712726297. The examiner can normally be reached on Monday-Friday 8-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 5712721267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS                      /Jill Warden/  
                            Supervisory Patent Examiner, Art Unit 1797  
12/21/2009